

REMARKS

This application has been carefully reviewed in light of the Office Action dated April 13, 2011. Claims 9, 10, 12, 13, and 15 are presented for examination, of which Claims 9 and 13 are in independent form. Claims 11 and 14 were previously withdrawn from consideration. Applicant requests favorable reconsideration and allowance of the subject application.

The Examiner is thanked for the courtesies extended during the telephonic interview held on July 7, 2011 to discuss the rejection of independent Claims 9 and 13. It is believed that this response, in conjunction with the Interview Summary issued by the Examiner dated July 19, 2011, represents a complete written statement as to the substance of the interview, in accordance with M.P.E.P. § 713.04.

In the Office Action the drawings were objected to under 37 CFR 1.83(a) for allegedly not showing the "light emitting diode die is mounted face down on the light emitting diode printed circuit board" and "rear side contacts of the light emitting diode". In the interview, the Examiner suggested that Applicant submit another drawing to show an example of a face down mounting arrangement. Without conceding the propriety of the objection, and merely to expedite prosecution of the application, Applicant submits herewith a drawing sheet including Fig. 4, which shows a face down mounting arrangement of an LED on a circuit board by means of a die attach. The specification has also been amended to describe the features of the arrangement shown in Fig. 4. Applicant believes that no new matter has been added.

Claims 13 and 15 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Office Action stated that there is insufficient antecedent basis for

the recitation "the rear side contacts of the light emitting diode" in line 12 of Claim 13 and the recitation "the plurality of through-contacts of the diode" in line 3 of Claim 15.

Without conceding the propriety of the rejections, Claims 13 and 15 have been amended to comply even more fully with the requirements of 35 U.S.C. § 112, second paragraph. The changes to Claims 13 and 15 were discussed during the interview and the Examiner agreed that such changes would overcome the rejections. Therefore, Applicant respectfully requests withdrawal of the rejections of Claims 13 and 15 under 35 U.S.C. §112, second paragraph.

In the Office Action Claims 9, 12, and 13 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Pat. Appln. Pub. 2002/0139990 (Suehiro). Claims 10 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Suehiro in view of U.S. Pat. Appln. Pub. 2002/0149312 (Roberts). Applicant submits that independent Claims 9 and 13, together with the claims dependent therefrom, are patentably distinct from the cited art for at least the following reasons.

Claim 9 is directed to a light emitting diode. The light emitting diode includes at least one light emitting diode die, arranged on a light emitting diode printed circuit board by means of a die attach, the light emitting diode printed circuit board comprising at a lower surface thereof rear side contacts. The rear side contacts of the light emitting diode printed circuit board at least partially overlap with contours of the light emitting diode die and are formed in such a way as to overlap with at least half of the lower surface of the light emitting diode printed circuit board. The light emitting diode printed circuit board comprises a plurality of conductive through-vias in the light emitting diode printed circuit board. The through-vias thermally and electrically connect the rear side

contacts of the light emitting diode printed circuit board to contact areas formed on an upper surface of the light emitting diode printed circuit board.

Among other features of Claim 9 is that the light emitting diode printed circuit board comprises a plurality of conductive through-vias in the light emitting diode printed circuit board. The through-vias thermally and electrically connect the rear side contacts of the light emitting diode printed circuit board to contact areas formed on an upper surface of the light emitting diode printed circuit board.

Claim 13 is directed to a light emitting diode light source. The light source includes at least one light emitting diode, wherein each light emitting diode comprises at least one light emitting diode die, arranged on a light emitting diode printed circuit board by means of a die attach. The light emitting diode printed circuit board comprises at a lower surface thereof rear side contacts. The rear side contacts of the light emitting diode printed circuit board at least partially overlap with contours of the light emitting diode die. The rear side contacts of the light emitting diode printed circuit board overlap with at least half of the lower surface of the light emitting diode printed circuit board. The light emitting diode printed circuit board further comprises a plurality of conductive through-vias in the light emitting diode printed circuit board. The through-vias thermally and electrically connect the rear side contacts to contact areas formed on an upper surface of the light emitting diode printed circuit board. The light emitting diode is arranged on an additional board. The additional board comprises on an upper surface thereof further contact areas which are soldered to the rear side contacts of the light emitting diode printed circuit board. A total surface area of the further contact areas is at least half of the area of the lower surface of the light emitting diode printed circuit board. The additional board

further comprises a further plurality of conductive through-vias in the additional board, the through-vias thermally and electrically connecting at least one of the further contact areas to a solder area formed at a lower surface of the additional board.

During the interview, the Examiner suggested that Claims 9 and 13 be amended to change "through-contacts" to "conductive through-vias". Agreement was reached with the Examiner that the suggested language would overcome the rejections of Claims 9 and 13 over Suehiro. The Examiner's suggestions have been adopted by Applicant and Claims 9 and 13 have been amended accordingly.

Therefore, for at least the foregoing reasons, Claims 9 and 13 are believed to be clearly allowable over Suehiro and Applicant respectfully requests withdrawal of their rejections under 35 U.S.C. § 102(b).

A review of the other art of record has failed to reveal anything that, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Therefore, those claims are respectfully submitted to be patentable over the art of record.

The other claims in this application depend from one or another of the independent claims discussed above, and, therefore, are submitted to be patentable over the art relied on in the Office Action for the same reasons.

This Amendment After Final Action is believed clearly to place this application in condition for allowance and, therefore, its entry is believed proper under 37 C.F.R. § 1.116. At the very least, however, it is believed that the formal rejections have been overcome. Accordingly, entry of this Amendment After Final Action, as an earnest effort to advance prosecution and reduce the number of issues, is respectfully requested.

Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicant's undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our Costa Mesa, CA office by telephone at (714) 540-8700. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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